completing and auditing forms has been simplified and made more efficient.

Rationale: We examined our internal form auditing processes as part of a cost reduction measure. Previously, we were auditing 100% of all research and Transplant Essential Data (TED) forms. Because of experienced data managers and their continued training, our error rate was low enough that reducing the breadth of the audit was justified.

Best Practices: Most events occur in the first year after transplant. Therefore, we placed importance on this time frame and varied the levels of importance on other forms and used stratified sample auditing to cover them. This allowed us to notice any trends in errors and provide training. By selecting a percentage of all forms, we can efficiently give feedback to data managers and provide targeted training sessions.

Method: We are currently auditing 100% of research; post-TEDs through 1 year. After 1 year we are utilizing the stratified sample method for auditing post TEDs 2-6 years at 50% and over 6 years at 25% per data manager. A data manager may request a form be audited at any time point. New employees are audited at 100% for their first year. We do routine education based on errors found on our audits.

Outcome: We tracked our error rate over the past year and a half and our calculated error rate was low enough to warrant this change. Our current average error rate was 0.41 errors per form. Through tracking audited forms, we found that we saved 2.7 weeks or 107.3 hours per year of the auditor's time. Revising the auditing process has improved time, efficiency and lowered the cost of auditing, while maintaining high quality work with low error rates. The time saving of approximately 3 weeks can be utilized in opening more studies and other projects data coordinators are responsible for.

Future: In phase two of time management, we have streamlined our submission processes for auditing and saving versions of forms. FormsNet3 (FN3) has proven that we no longer need to do this and will in turn save valuable drive space. The amount of time used to convert the form to PDF, submit it, and correcting and resaving will also be saved with the new process. We utilize the audit sheet to track errors, communicate to data managers, and make corrections in FN3 — all without having to PDF a form. Additionally, errors are sent and seen on a weekly basis and data managers are given a week to make the corrections inFN3. We found 3.8 weeks per year of data managers' time can be saved with this change in process.

BMT ADMINISTRATION/QUALITY

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30 Day Readmissions – a 4 Year Look Back of Multi-Disciplinary Efforts

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Purpose: Hospital readmissions have been identified as an indicator of poor quality care, are costly and largely preventable. As the focus of hospital readmissions became more evident with the Affordable Care Act, our program began discussions on how to reduce our 30 day readmission rate. Since BMT programs are structured, process driven, and well communicated, we felt this combination was ideal for identification of weaknesses and areas for improvement to reduce our rate.

Implementations: Our first action was a real time multidisciplinary review of every 30 day readmission. The hope was to identify contributing factors with input from all team members that may not have been captured through documentation alone. Unfortunately no common themes were identified. Other early on initiatives included:

- A hospital wide initiative was instituted for Nurse on Call to contact all patients by phone within 48 hours of discharge.
- We began utilizing our BMT PharmDs for allogeneic discharge medication education. Unit nurses and nurse coordinators still perform medication education; adding the third clinician to create the individualized medication schedule was a hope for increasing medication compliance.
- Our nurses began assessing autologous patients in person within 48-72 hours of discharge instead of immediate return to their local oncologist.
- All patients must be seen by a BMT physician within 5 days of discharge and have the appointment scheduled prior to leaving the hospital.
- A longstanding effort is the post-transplant preparation group held monthly prior to discharge. Multi-disciplinary team members gather to educate patients and families on what to expect after discharge.

A revived effort in reducing readmission was warranted as the pressure to decrease our rate continued. The most recent initiatives this year include:

- The creation of a same day BMT Acute Care Clinic. If patients call with complaints, there are dedicated appointments where BMT physicians assess and treat patients the same day.
- Midlevel providers and transplant nurse coordinators began a twice a week huddle to discuss upcoming discharges and identify potential hurdles to discharge.
- Mid-level providers began collecting a readmission survey in attempt to gather more data surrounding the

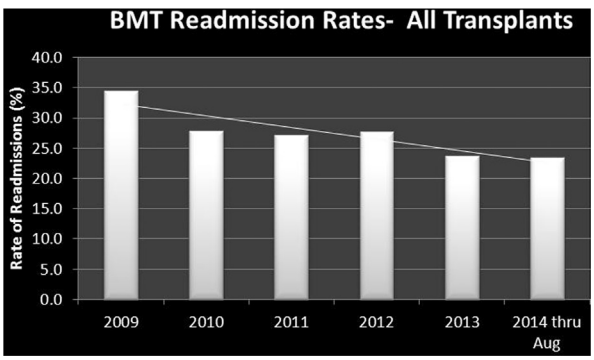

Figure. BMT Readmission Rates - All Transplants.

readmission reason from a family member/caregiver perspective.

Conclusion: While our 30 day readmission rate has decreased from 34.6 in 2009 to current rate of 23.5 (See Figure), we still have work to do. The initial reduction cannot be attributed to any particular effort(s) and we will continue to be diligent and innovative in this endeavor. Some readmissions are not preventable and fevers are a big barrier. In the near future we hope to create a working group with other institutions, focus on the patients who are readmitted frequently, and develop criteria to define what a true preventable readmission is.

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Building a Quality Plan for a Blood and Marrow Transplant Program: Quality Framework and Indicator Development

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Introduction: Quality of care is a priority among patients, providers, and accreditors in blood and marrow transplantation (BMT), and has resulted in the need to develop quality management systems. BMT programs can apply quality frameworks such as the Model for Improvement, which guide programs to set quality goals, and to develop quality measurement and reporting strategies to ensure progress toward those goals. We report on the systematic, end-user-informed development of a set of quality indicators, to be monitored and reported on in the context of a quality framework at the Princess Margaret Cancer Centre BMT program.
Methods: This involved three phases: 1) Evidence Review (database and grey literature search for quality indicators used in BMT); 2) Modified Delphi process, in which identified indicator concepts were discussed to generate a list of broad clinical categories, then prioritized via a staff survey; and 3) investigation of the published literature for data standards for these indicators.
Results: Evidence review generated 214 indicators, which were categorized as Clinical (n=139), Management-level (n=40), or Hospital-wide (n=35). Only the Clinical indicators were deemed meaningful for staff prioritization. By merging like concepts, the 139 indicators were reduced to 22 for inclusion in the prioritization exercise. Prioritization was achieved through an online survey sent to 152 clinical BMT staff. Respondents ranked indicators based on their perceived clinical value as quality measures. Respondents ranked “Survival” and “Treatment-related mortality” most frequently in their top 3 choices. However, a low survey response rate (35 of 152, or 23%) suggested a lack of staff awareness of quality measurement, and a need to coordinate staff education and creation of a quality improvement culture to ensure success of such initiatives in the future. Next, Management-level indicators were pared down through discussion and consensus, generating 12 indicators to be developed for future reporting. The Hospital-wide indicators, which were non-BMT-specific but could be adapted for use in BMT quality measurement, were mapped to corresponding Management-level and Clinical indicators. Their existing measurement structures may be useful in developing measurement strategies for our BMT-specific quality indicators. Finally, working toward eventual implementation, all indicators were assessed for any data standards mentioned in the literature. Our findings revealed a paucity of published data standards for BMT quality indicators, highlighting a need for more research in this field.
Conclusions: Quality indicator development in BMT can be undertaken systematically, but requires a concerted effort from staff engagement to informatics infrastructure. Currently, this area is challenged by a lack of published development standards and implementation studies.

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Is G-CSF Still Needed Post-Transplant to Promote Engraftment in the Present Era? a Multi-Disciplinary Project to Evaluate Patient Safety vs. Cost Savings

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Background: The use of granulocyte colony stimulating factor (G-CSF) to promote engraftment after hematopoietic cell transplantation (HCT) remains controversial. Randomized controlled trials that showed a shorter duration of neutropenia after G-CSF in autologous (auto) HCT recipients were performed in an era when present supportive care resources were not available. The use of G-CSF after allogeneic (allo) HCT is not established by randomized trials and there is a concern that it may be associated with an increased risk of graft-versus-host disease. G-CSF is a costly drug and excluding its routine use may translate into significant cost savings for a transplant program. All inpatients transplanted routinely receive G-CSF 480 mcg/day starting day +5. We conducted a pilot study to evaluate if G-CSF post-HCT could be safely omitted after autologous and allogeneic HCT.
Methods: 2013 data was used as benchmarks for neutrophil engraftment and hospital length of stay (LOS), calculated from day 0. Three separate pilots were conducted for auto HCT, myeloablative (MAC) allo and reduced-intensity (RIC) allo HCT recipients. Eligibility criteria included sufficient cell dose for the product to be infused (PBSC $\geq$5.0 x10^6 CD34+ cells/kg for autos, $\geq$2.0 x10^6/kg for allos or BM $\geq$2.0x10^8 TNC/kg). G-CSF was not administered prophylactically, but could be given in clinical scenarios such as prolonged febrile

Table

G. CSF Pilot Interim Analysis

	No G. CSF **Median (Days)**	G CSF **Control (Days)**
Autologous (7 Cases, 10 Controls)		
LOS	15	12
Neutrophil Engraftment	12	10
Allogeneic MAC (BM & PBPC) (9 Cases, 9 Controls)		
LOS	22	17
Neutrophil Engraftment	22	12
Allogeneic RIC (PBPC) (10 Cases, 10 Controls)		
LOS	19	17
Neutrophil Engraftment	14	13